Title (en)

DEVICE MODULE FOR THE DETECTION OF TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR ORIGINATED MICRO-JUMPS IN A GLOBAL NAVIGATION SATELLITE SYSTEM AND RELATED DETECTION METHOD

Title (de)

VORRICHTUNGSMODUL ZUR DETEKTION VON MIKROSPRÜNGEN, ERZEUGT DURCH EINEN TEMPERATURKOMPENSIERTEN KRISTALLOSZILLATOR IN EINEM GLOBALEN NAVIGATIONSSATELLITENSYSTEM UND ENTSPRECHENDES DETEKTIONSVERFAHREN

Title (fr)

MODULE DE DISPOSITIF POUR LA DÉTECTION DE MICRO-SAUTS PROVENANT D'UN OSCILLATEUR À CRISTAUX COMPENSÉS PAR LA TEMPÉRATURE DANS UN SYSTÈME GLOBAL DE NAVIGATION PAR SATELLITE ET PROCÉDÉ DE DÉTECTION ASSOCIÉE

Publication

EP 3404446 B1 20220727 (EN)

Application

EP 18171778 A 20180511

Priority

IT 201700052505 A 20170515

Abstract (en)

[origin: EP3404446A1] A device for the detection of Temperature Compensated Crystal Oscillator originated micro-jumps in a GNSS (Global Navigation Satellite System) receiver (100), said receiver (100) comprising a radio frequency stage (2) associated to a Temperature Compensated Crystal Oscillator (2a) to down convert received satellite signals (S 1 , ...S NS) as a function of the frequency of Temperature Compensated Crystal Oscillator (2a), an analog digital conversion module (3) to obtain digital signals from the down converted satellite signals, an acquisition module (4) including correlators (41) to identify in the digital signals satellites in visibility and provide corresponding GNSS information, in particular code and frequency information, supplying samples of in phase and quadrature components (I,Q) of said GNSS information to a tracking module (5), comprising a plurality of tracking channels (TRK 0 ...TRK NS-1) comprising a frequency or phase locked loop (513, 514) adjusting a tracking numerical controlled oscillator (54) which frequency is used to demodulate said GNSS information, said tracking module (5) including accumulating (511) over an accumulation period (k) having the bit length of the GNSS information and mixing (512) between consecutive bits to produce mixed quantities (I MIX , Q MIX) which are used to compute an averaged phase rate (#Æ) used as set point of said frequency or phase loop (513, 514). The device module comprises a feeder module (210) configured to mix the information in the in phase and quadrature components (I,Q) inside the bit time frame of the GNSS information, to obtain a wide band phase (#Æ 10) and configured to obtain a previous carrier to noise ratio estimate (Cn0* k-1) value, available on the channel from accumulation over the previous accumulation period (k-1), a vector table module (220), configured to store the wide band phase (#Æ 10) and the previous carrier to noise ratio estimate (Cn0* k-1) value for each tracking channel (TRK i) of the tracking module (5), the feeder module (210) being configured to populate said vector table module (220) with said wide band phase (#Æ 10) and previous carrier to noise ratio estimate (Cn0* k-1) value, a global monitor module (230) configured to scan (300) the vector table module (220) and to detect the occurrence of a micro-jump on the basis of the values of the wide band phase (#Æ 10) and previous carrier to noise ratio estimate (Cn0* k-1) present for each tracking channel (TRK i) in said vector table module (220), said global monitor module (230) being further configured to compute (350) an amount (#f) of said detected micro-jump and use said amount to update said tracking numerical controlled oscillator (54).

IPC 8 full level

G01S 19/23 (2010.01)

CPC (source: EP US)

G01S 19/23 (2013.01 - US); **G01S 19/235** (2013.01 - EP US); **G01S 19/29** (2013.01 - US)

Cited by

CN111629266A; CN109856596A

Designated contracting state (EPC)

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DOCDB simple family (application)

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